This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-4 (Cancelled)

Claim 5 (Currently Amended) In a compressor having a series of turbine blades that are housed in a casing and rotate at a blade pass frequency, wherein certain movements of the turbine blades generate pressure waves that propagate to the casing and thereby cause the casing to vibrate, a method of estimating the operable life of turbine blades in the compressor, said method comprising the steps of:

monitoring blade pass frequency of the turbine blades;

sensing fluctuations in said blade pass frequency to identify a developing condition of rotating stall;

sensing vibrations in the casing caused by movement of the turbine blades;

correlating the sensed vibrations to a frequency value representative of the vibration frequency of the casing;

identifying when the turbine blades are subjected to a condition of rotating stall by determining when said frequency value is outside of a known range of frequency values of the casing during normal turbine blade operation; and

factoring the identified developing condition of rotating stall and the identified condition of rotating stall into an estimation of the operable life of a turbine blade in the compressor.

Claim 6 (Previously Presented) The method according to claim 5, wherein the step of correlating the sensed vibrations to the frequency value includes the step of comparing the sensed vibrations to a known correlation between casing vibrations and casing frequency values.

Claim 7 (Previously Presented) The method according to claim 6, wherein the step of correlating the sensed vibrations to the frequency value utilizes Fast Fourier Transform.

Claim 8 (Canceled)

Claim 9 (Currently Amended) A system configured to estimate the operable life of turbine blades in a compressor, the system comprising:

a compressor having a plurality of turbine blades that are housed in a casing and rotate at a predetermined blade pass frequency, wherein certain movements of the turbine blades generate pressure waves that propagate to the casing and thereby cause the casing to vibrate;

a sensor coupled to the casing, wherein the sensor is configured to sense vibrations in the casing and to generate a measurement signal representative of the sensed vibrations; and

a processor coupled to the sensor, wherein the processor is configured to receive the measurement signal from the sensor and to correlate the measurement signal to a frequency value representative of the vibration frequency of the casing;

wherein the processor is further configured to identify when the turbine blades are subjected to a condition of rotating stall by determining when said frequency value is outside of a known range of frequency values for the casing during normal turbine blade operation;

wherein the processor is further configured to identify a developing condition of rotating stall based upon fluctuations in the blade pass frequency of the turbine blades;

wherein the processor is further configured to communicate a developing condition of rotating stall and an identified condition of rotating stall to a lifetime estimation tool configured to estimate the operable life of turbine blades in the compressor; and

wherein the lifetime estimation tool is configured to estimate the operable life of turbine blades in the compressor based at least in part on the developing condition of rotating stall and the identified condition of rotating stall.

Claim 10 (Previously Presented) The system according to claim 9, comprising a display, wherein the processor is configured to display the frequency values of the casing on the display.

Claim 11 (Previously Presented) The system according to claim 10, wherein the processor is further configured to display the known range of frequency values of the casing during normal turbine blade operation on the display.

Claim 12 (Previously Presented) The system according to claim 9, wherein the processor converts the measurement signal into the frequency condition by comparing the measurement signal to a known correlation between measurement signals and frequency conditions.

Claim 13 (Previously Presented) The system according to claim 12, wherein the processor is configured to utilize Fast Fourier Transform to perform the conversion.

Claim 14 (Previously Presented) The system according to claim 9, wherein the sensor is an accelerometer.

Claim 15 (Previously Presented) The system according to claim 9, wherein the sensor is mounted on an outside surface of the casing with respect to the turbine blades.

Claim 16 (Canceled)